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The Paxman Scalp Cooling System

Revolutionary technology for the management of chemotherapy-induced alopecia.



Globally, 6.4 million patients will lose their hair every year as a result of chemotherapy.[1,2]

It is predicted that by 2040, that figure will be over 9.7 million people.[3]

Retention & regrowth with scalp cooling

Chemotherapy-induced alopecia (CIA) is a common side effect of chemotherapy due to the rapidly dividing cells in the hair follicles. Chemotherapy agents cannot distinguish between these cells and the cancerous ones due to their similar nature of growth.

For decades, chemotherapy-induced alopecia (CIA) has remained one of the most visible and distressing side effects of cancer treatment.

Loss of hair can be traumatic, debilitating, and can have an understandably profound effect on a patient's identity, privacy and confidence, making strategies for managing this side-effect crucial.

When treatment leaves a patient with visible scars like hair loss, they haven't just survived one trauma, they have stepped into another.



For people receiving chemotherapy, scalp cooling can mean:

- Regaining some control when so much is out of their hands
- Keeping their diagnosis private
- Shielding their family and friends
- Positive attitudes to treatment (i.e. not rejecting chemotherapy for fear of hair loss)
- Quicker hair regrowth[5] and prevention of persistent chemotherapy-induced alopecia (PCIA)[6]
- Preventing stress and depression
- Retaining their identity, confidence and normality

UP TO 1 IN 7 PATIENTS REJECT CHEMOTHERAPY OUTRIGHT AS THEY DO NOT WANT TO LOSE THEIR HAIR.[4]

The Paxman Scalp Cooling System, the leading product for CIA prevention



Globally recognised as the leading product for hair loss prevention during chemotherapy treatment for solid tumour cancers.

The Paxman Scalp Cooling System (PSCS) revolutionises the way chemotherapy-induced hair loss is managed around the world, and its innovative features can improve the experience for everyone involved, from patients to clinicians.

The System

The mobile, compact refridgeration unit responsible for maintaining the cool temperatures of the cap and circulating coolant throughout the system.

Coolant

The unique sub-zero cooling agent flows through the cap that is fitted onto the scalp, extracting heat from the scalp and allowing low temperatures to reach the hair follicles.

The Cap

Based on years of cranial research data, the cap uses patented, curved cooling channels for optimal coolant distribution across the scalp.

The Cap Cover

The cap cover keeps the inner cap in close, consistent contact with the scalp allowing it to achieve its full potential.

Designed for seamless integration into busy oncology settings, the system is simple to set up, easy to operate and requires minimal staff intervention.

Shaping the future of supportive oncology care

Backed by clinical and real-world data

The efficacy and safety of scalp cooling to prevent chemotherapy-induced alopecia has long been demonstrated in wide range of clinical trials within numerous cancer centres around the world.[7, 8]

On average, patients have a 53% chance of retaining half of their hair or more, based on the largest real-world study to date of 7,424 patients. Additionally, 56% of all patients studied did not require a head covering.[9]

This vast amount of patient data informs our Outcomes Calculator, giving patients and clinicians an indication of possible hair retention. To support this, our study library provides access to over 100 publications and resources with advanced filters covering a range of topics.

56%

did not require a head covering

53%

retained more than 50% of their hair

A globally recognised standard

As a result of dedicated R&D and clinical validation, scalp cooling is recognised by leading oncology organisations and bodies worldwide as part of their national oncology care guidelines. Paxman devices are also cleared by a number of major regulatory authorities, such as the U.S. FDA and European MDR.

National Comprehensive Cancer Network® (NCCN®) • European Society for Medical Oncology
ONS Guidelines (US) • AFSOS (France) • AGO Arbeitsgemeinschaft Gynäkologische Onkologie e.V (Germany)
UK Oncology Nursing Society • Japanese Association of Supportive Care in Cancer • Cancer Australia
Breast Cancer Guidelines by V&VN (Netherlands) • German Guideline Program in Oncology

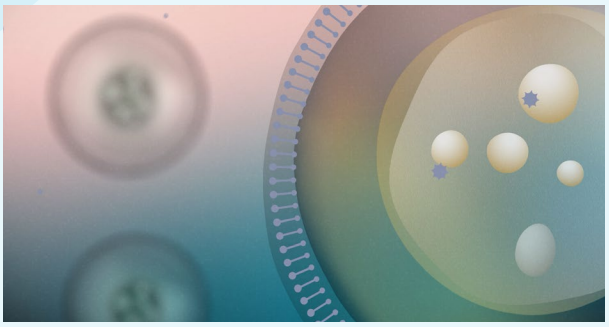
For further details of these studies and a comprehensive clinical overview, please refer to the Paxman Scalp Cooling Clinical Evidence Brochure.

The science behind the system

The mechanisms of action

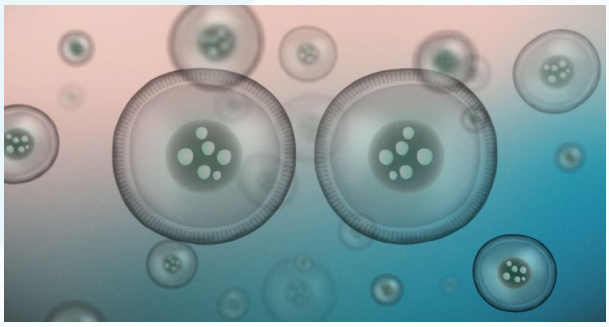


Extensive research has found four biological mechanisms take place to explain how scalp cooling protects the hair follicles,[10] leading to reduced hair loss and enabling follicles to regrow hair faster.



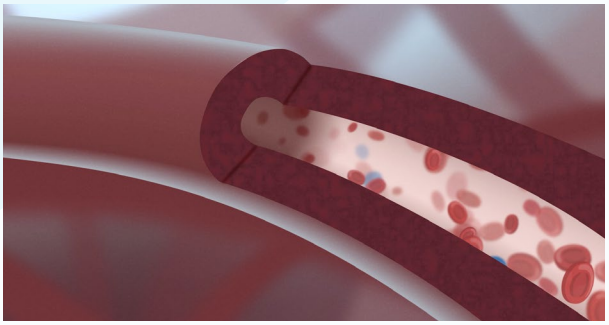
Reduced drug uptake

The rate of drug uptake across the plasma membrane is reduced when the scalp is exposed to the colder temperature of cold capping, reduced active transport or diffusion of cytotoxic drug. Therefore, the cellular activity of the hair follicles decreases, as does the kinetic energy and membrane fluidity.



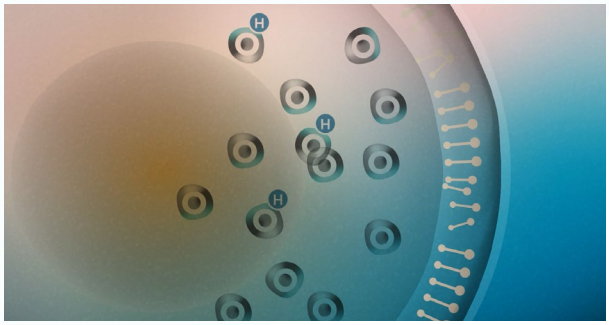
Reduced hair follicle cell division

Both cancer cells and hair follicle cells divide rapidly. Chemotherapy drugs are unable to distinguish between the two. Cooling can slow the rate of this division in the hair follicles, making them less susceptible to being targeted by the chemotherapy drugs.



Vasconstriction

Vasoconstriction occurs as the cold cap reduces the scalp temperature below normal levels. This results in a reduction of blood flow between 20-40% of normal blood flow levels, reducing the extent of the chemotherapy drug exposure to the hair follicles.



Reduced metabolic activity

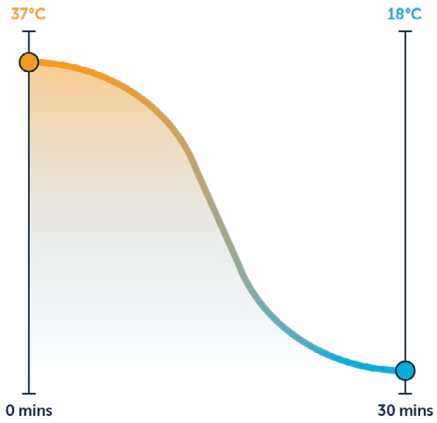
In addition to cell division, cooling also reduces the metabolic rate of cells, and therefore a range of cellular processes decelerate – such as oxidisation.

The Scalp Cooling Gradient

Studies have shown that a scalp temperature of approximately 18-22°C/64-72°F is optimal for scalp cooling to offer protection via its determined mechanisms.[11] Whereas, cells at 18°C/64°F and below will be further protected.

With the system coolant temperature set at -5°C, the graph to the right demonstrates the reduction of the scalp temperature during the pre-infusion cooling time of 30 minutes, taking the scalp temperature from 34 - 37°C (average scalp temperature) to the target range of 18-22°C (64–72°F) to achieve optimum results.

We call this the Scalp Cooling Gradient – a basic and fundamental element to scalp cooling success. The lower the cap temperature, the more a hair follicle cell is protected from chemotherapy drugs.

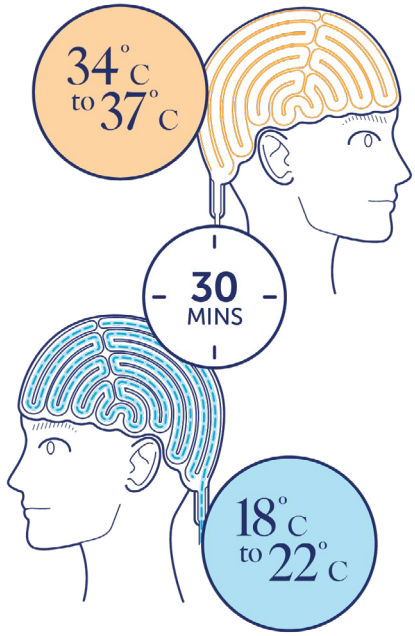


Treatment Success

The success of the treatment is significantly affected by the ability of the system to lower and maintain the scalp at a constant temperature of 18°C/64°F.[11]

When fitted correctly, the Paxman Scalp Cooling System aims to achieve this within 30 minutes of pre-infusion cooling.

Scalp cooling is well tolerated by most patients, and its safety is well documented in world-leading clinical research.[12]



A REAL-WORLD SCALP COOLING REGISTRY OF 7,424 PATIENTS DEMONSTRATED THAT JUST 3% OF PATIENTS REPORTED STOPPING SCALP COOLING DUE TO THE COLD OR DISCOMFORT.[9]



Revolutionising chemotherapy hair loss management

The System

Compact. User-friendly.
Built for busy oncology clinics.



Intuitive by design

- **Maintains safe, consistent temperatures,** helping to achieve the optimum scalp temperature (18°C–22°C). This enables sufficient cooling at tolerable levels, essential for maximum hair retention and regrowth.
- **Quick and easy to use** with an intuitive visual touchscreen interface that guides you through the scalp cooling process. Available in multiple languages.
- **Instant cooling capabilities** for immediate use once a patient is connected to the system.*
- **Easy to manoeuvre** to a post-infusion cooling area, freeing up space in the infusion room.

Designed for real-world oncology care

- Uses vapour compression technology to ensure **safe, durable and consistent cooling.**
- **Quick release plastic couplings** ensure convenience, safety, and minimal spillage of coolant.
- **Bathroom break timer feature,** allowing patients to simply and temporarily disconnect for up to 10 minutes.
- **Quiet operation** prevents distraction and disruption, maintaining a calm atmosphere for both patients and nurses.
- **Mechanical operation** and user-friendly cooling timers make administering treatment more manageable, reducing the burden on nursing staff.

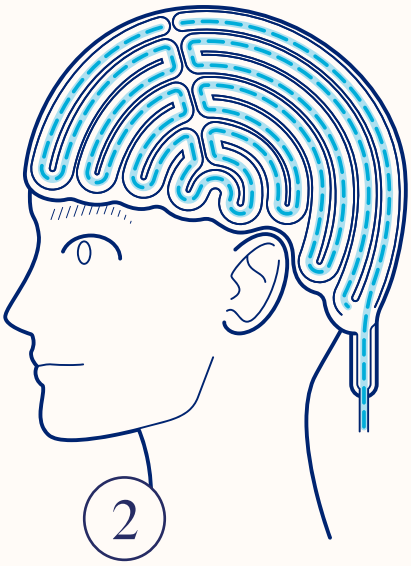
Always with patient safety in mind

- **Temperature and quality-controlled design** to prevent over- or undercooling.
- **Visual and audible information signals** for restricted or lack of coolant flow.
- **Clean, clutter-free setup** thanks to smart coolant line management for maximum comfort and safety.

Save space and free up your time

Small and compact, ideal for infusion sites where space is at a premium. Also available as a **dual system option** enabling the simultaneous and independent treatment of two patients.

*After an initial 30 minute refrigeration period at the start of each day.



The Coolant

The link between system and cap. The unique coolant is fundamentally essential to support the maintenance of a consistent target scalp temperature.*

Optimised for oncology workflows

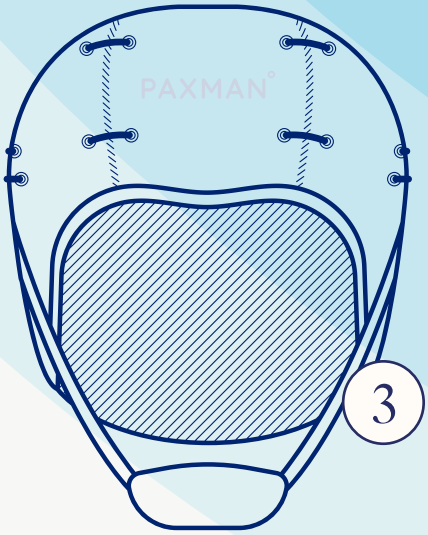
- Coolant refills ensure **easy and mess-free top ups.**
- Coolant level sensors and **minimal system downtime** – frequent use of the system reduces evaporation of the coolant, resulting in fewer top ups.
- **Continuous coolant flow** eliminates the need for frequent cap changes experienced with manual caps, reducing clinical intervention time.
- **Temperature is continuously monitored** by the system, freeing up valuable nursing time.

Reliable, continuous cooling

- **Low temperature, non-viscous unique coolant** with sub-zero operating capability prevents freezing or crystallisation, ensuring a better flow rate compared to other coolants.
- Ultra-efficient heat transfer properties allow heat extraction from the scalp to be re-cooled via the system, **maintaining the target temperature for optimal results.**



*As explained on page X



The Cap & Cap Cover

Medical grade engineering meets human-centred design.

The only 3D-formed cold cap available in the shape of a human head.

- Patented curved channels of the cap ensure maximum surface contact for the most **efficient coolant distribution across the scalp,** supported by years of cranial data studies.[13]
- Made from medical-grade silicone using **3D-modelling technology, which adapts to global head shape variances** for the optimal close-fitting surface contact – crucial to maximising potential hair retention, regrowth, and achieving the best possible outcomes.
- **Lightweight and flexible for a comfortable fit.**

Secure where it counts. Simple where it matters.

- The bungee cord mechanism has been designed for ease of use, **preventing loose cap fitting** and air pockets without overtightening.
- A chin strap ensures **even compression** around the head.
- Cap and covers are supported by **simple guidance** from Paxman for the best fit.
- Caps and covers available in a **range of sizes to suit varying head sizes,** with colour-coded sizing for quick and easy identification.

Setting the conditions for optimal cooling

- **Insulating neoprene cap cover** prevents heat absorption from ambient temperatures, keeping the cap and scalp cool.[14]
- **No drips** - the cover's absorbent lining additionally minimises condensation from the cap before it reaches the patient's neck.
- Adjustable bungee cords and toggle on the cap cover ensure **maximum scalp contact** with the cap.

A more sustainable choice

Cap and covers can be immediately reused after treatment by other patients reducing the total number of cap needed compared to manual cold capping.

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A degree of control®

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